

### **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application.

#### **Listing of Claims:**

Claim 1 (Currently amended)  
Claims 2-10 (Original)  
Claims 11-12 (Cancelled)  
Claims 13-14 (Original)  
Claim 15 (Currently amended)  
Claims 16-17 (Original)  
Claim 18 (Currently amended)  
Claims 19-22 (Original)  
Claim 23 (cancelled)  
Claim 24 (Cancelled)  
Claim 25 (Original)  
Claim 26 (Currently amended)  
Claim 27 (Currently amended)  
Claim 28 (Original)

1. (Currently amended) A processing apparatus arranged to be coupled to a network of nodes linked together by physical connections, the processing apparatus comprising:

a receiver that operates to receive at least one logical connection parameter associated with each of at least one port within a plurality of the nodes;

said logical connection parameter comprising at least one of a logical connection user label, span IP address or logical connection channel information;  
and

a processor, coupled to the receiver, that operates irrespective of traffic data flow rate to process the received logical connection parameters in order to predict at least one physical connection between two of the ports within the plurality of nodes based upon the results of the processing.

2. (Original) A processing apparatus according to claim 1, wherein to process the received logical connection parameters, the processor operates to, for a first one of the two ports, determine at least one most probable port that the first port is physically connected to, this most probable port being the second of the two ports.

3. (Original) A processing apparatus according to claim 1, wherein to process the received logical connection parameters, the processor operates to, for a first one of the two ports, determine a set of most probable ports that the first port is physically connected to, this set of most probable ports including the second of the two ports.

4. (Original) A processing apparatus according to claim 3, wherein to determine a set of most probable ports that the first port is physically connected to, the processor operates to determine a port similarity variable for a plurality of the ports when compared to the first port; and insert all ports that were determined to have the largest port similarity variable within the set of most probable ports.

5. (Original) A processing apparatus according to claim 4, wherein the port similarity variable for each of the ports when compared to the first port is equal to the number of logical connections that are identical between the first port and the particular port that the port similarity variable is being determined for.

6. (Original) A processing apparatus according to claim 1, wherein to process the received logical connection parameters, the processor operates to sort the ports within the plurality of nodes based upon the number of logical connections at the ports; and, for a first one of the two ports, determine a set of most probable ports that the first port is physically connected to, this set of most probable ports including the second of the two ports.

7. (Original) A processing apparatus according to claim 6, wherein to determine a set of most probable ports that the first port is physically connected to, the processor operates to determine a port similarity variable for a plurality of the ports when compared to the first port, starting with the port with the largest number of logical connections and proceeding until a subsequent port would have a number of logical connections less than the largest port similarity variable already determined; and insert all ports that were determined to have the largest port similarity variable within the set of most probable ports.

8. (Original) A processing apparatus according to claim 1 wherein if there are a plurality of logical connection parameters associated with each of the at

least one ports, the processor selects one or more of the plurality of logical connection parameters to predict the at least one physical connection.

9. (Original) A processing apparatus according to claim 8 wherein the selecting is performed with a graphical user interface integral to said processor.

10. (Original) A processing apparatus according to claim 1, wherein to predict at least one physical connection between two of the ports within the plurality of nodes, the processor operates to predict physical connections between a plurality of pairs of the plurality of nodes based upon the results of the processing.

11. (Canceled)

12. (Canceled)

13. (Original) A processing apparatus according to claim 3, wherein, if multiple ports are included within the set of most probable ports, a span address associated with each port is used to determine the port with which there is a physical connection.

14. (Original) A processing apparatus according to claim 1, wherein the processor predicts at least one physical connection between two of the ports within the plurality of nodes based upon the results of the processing and based upon known physical connection information with respect to the network.

15. (Currently amended) A processing apparatus according to claim ~~[[16]]~~ 14, wherein the known physical connection information comprises information generated within an auto discovery procedure.

16. (Original) A processing apparatus according to claim 1, wherein to receive at least one logical connection parameter associated with each of at least one port within a plurality of the nodes, the receiver operates to receive stored information from a database.

17. (Original) A network manager for a network of nodes comprising a processing apparatus according to claim 1.

18. (Currently amended) A method of predicting at least one physical connection within a network of nodes linked together by physical connections, the method comprising:

receiving at least one logical connection parameter associated with each of at least one port within a plurality of the nodes;

said logical connection parameter comprising at least one of a logical connection user label, span IP address or logical connection channel information;

processing the received logical connection parameters irrespective of traffic data flow rate; and

predicting at least one physical connection between two of the ports within the plurality of nodes based upon the results of the processing.

19. (Original) A method according to claim 18, wherein the processing step comprises, for a first one of the two ports, determining at least one most probable port that the first port is physically connected to, this most probable port being the second of the two ports.

20. (Original) A method according to claim 18, wherein the processing step comprises, for a first one of the two ports, determining a set of most probable ports that the first port is physically connected to, this set of most probable ports including the second of the two ports.

21. (Original) A method according to claim 20, wherein the determining a set of most probable ports that the first port is physically connected to comprises:

determining a port similarity variable for a plurality of the ports when compared to the first port; and

inserting all ports that were determined to have the largest port similarity variable within the set of most probable ports.

22. (Original) A method according to claim 18, wherein the processing step comprises:

sorting the ports within the plurality of nodes based upon the number of logical connections at the ports;

for a first one of the two ports, determining a port similarity variable for a plurality of the ports when compared to the first port, starting with the port with the largest number of logical connections and proceeding until a subsequent port would have a number of logical connections less than the largest port similarity variable already determined; and

inserting all ports that were determined to have the largest port similarity variable within a set of most probable ports that the first port is physically connected to, this set of most probable ports including the second of the two ports.

23. (Canceled)

24. (Canceled)

25. (Original) A method according to claim 18, wherein the predicting at least one physical connection between two of the ports within the plurality of nodes is performed based upon the results of the processing along with known physical connection information with respect to the network.

26. (Currently amended) A network comprising:

a plurality of nodes linked together by physical connections;

at least one processing apparatus arranged to be coupled to the nodes, the processing apparatus operating to receive at least one logical connection parameter associated with each of at least one port within a plurality of the nodes; said logical connection parameter comprising at least one of a logical connection user label, span IP address or logical connection channel information;

and process the received logical connection parameters irrespective of traffic data flow rate in order to predict at least one physical connection between two of the ports within the plurality of nodes based upon the results of the processing.

27. (Currently amended) A network according to claim [[30]] 26 further comprising a database for storing the logical connection parameters;

wherein to receive at least one logical connection parameter associated with each of at least one port within a plurality of the nodes, the processing apparatus operates to receive stored information from the database.

28. (Original) A network according to claim 26 wherein the network is an optical network.